Before the
Federal Communications Commission
Washington, D.C. 20554

Federal-State Joint Board on Universal Service	)	
Defining Voice Grade Access	)	CC Docket No. 96-45

COMMENTS OF NORTEL NETWORKS INC.

Nortel Networks Inc. ("Nortel Networks") hereby briefly responds to the Common Carrier Bureau's Public Notice asking for comment on requests to change the definition of "voice grade access" for purposes of universal service support.[1] Several State Commissions and the Rural Utilities Service ("RUS") asked the Commission to alter its definition of "voice grade access to the public switched network."[2] These parties are concerned that the current definition does not ensure rural customers with sufficient bandwidth for even 28.8 kilobits per second access to the Internet or other information services. These parties request that the Commission expand the specification for the minimum bandwidth from the current 300 to 3,000 Hertz, to a broader minimum of some 200 or 300 Hertz to 3,400 or 3,500 Hertz.

Nortel Networks shares these parties' concerns with the need to enhance the availability of advanced information services in rural America (as well as the rest of the country). However, as explained below, Nortel Networks believes the Commission

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1 *Public Notice*, DA 99-2985, released December 22, 1999.

2 47 C.F.R. § 54.101(a)(1).

should address these issues more directly (for example, by allocating additional spectrum or initiating a proceeding to examine what is included as supported services), without disrupting the ongoing efforts to provide and enhance service to rural America today.

Nortel Networks is the leading global supplier, in more than 100 countries, of digital telecommunications systems to businesses, universities, local, state and federal governments, the telecommunications industry, and other institutions. The company employs more than 30,000 people in the United States in manufacturing plants, research and development centers, and in marketing, sales and service offices across the country.

Nortel Networks is very interested in this proceeding, because it has vigorously supported a broad range of wireline and wireless solutions for bringing advanced services to all parts of the country, including rural America.[3] Nortel Networks thus comments briefly on the proposal of the State Commissions and the RUS to address these issues by altering the definition of "voice grade access."

Nortel Networks acknowledges that in some rural areas in this country, the telecommunications services, including Internet access services, lag behind the

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[3] Nortel Networks has been at the forefront of managing the evolution of the wireline public switched network from a circuit switched network to a digital packet network capable of supporting voice and data services. In addition, Nortel Networks continues to maximize the capabilities of the embedded wireline loops by developing Digital Subscriber Loop ("DSL") products, such as the 1 Meg-Modem. *Northern Telecom Inc.*, DA 99-1350, released July 30, 1999. On the wireless front, Nortel Networks has long advocated wireless solutions as a means of quickly and economically deploying advanced services to businesses and consumers, particularly in sparsely populated areas. Nortel Networks has developed Fixed Wireless Access products that have been deployed in other countries and that could readily be adapted here, if appropriate spectrum was allocated for these purposes. *E.g.*, Comments of Northern Telecom in ET Docket No. 98-237, filed February 16, 1999. Likewise, Nortel Networks is providing equipment to provide broadband wireless services in the 24 GHz band, and has been very actively involved in the development of so-called "Third Generation" mobile services that can support high-speed services.

capabilities available in the densely populated territories. Nortel Networks also believes that the marketplace is beginning to address these discrepancies, and will continue to do so as new technologies are deployed and additional spectrum is allocated. While Nortel Networks lauds the desire of the State Commissions and the RUS to accelerate this process, it is concerned that the proposed method of accomplishing this goal -- by amending the definition of "voice grade access" -- will have unintended adverse consequences.

As an initial matter, Nortel Networks observes that the current minimum bandwidth specified in the Commission's Rules -- 300 to 3,000 Hz -- delivers quality voice services. Insofar as the Commission explicitly adopted voice services as the standard for the current universal service support system, there is no need to change this specification because of any legitimate concern that inadequate voice services are somehow endorsed under the Commission's present definition of "voice grade access." Rather, the desire of the State Commissions and the RUS is to expand the definition of "voice" services to include a specified level (28.8 kbps) of data services.

Nortel Networks does not believe, however, that it makes sense to attempt to address data access by re-defining voice grade access. One consequence of the evolving communications technology is that voice and data access are increasingly being addressed separately in order to recognize the differing characteristics of these transmissions and obtain maximum advantage of the wireline and wireless communications links. For example, DSL technology separates the voice and data traffic in order to provide high-speed data and a voice channel simultaneously over a single twisted copper pair. Likewise, the nature of wireless mobile technology is such

that reliable data communication is difficult using conventional voice band analog modems. In order to address this problem, second and third generation mobile services are being designed to treat data separately from voice by using a data network overlay, and thus will be able to provide reliable high-speed data communications.

The suggested revision of the "voice grade access" bandwidth specification so as to accommodate data transmissions is thus inconsistent with technology trends. Moreover, bandwidth is not the sole determinant of possible data rates. Factors, such as impulse noise, envelope delay distortion and encoding technique also are factors that impact the ability of a channel to carry data. Thus, the proposed change may not even be effective in achieving the desired result. Therefore, Nortel Networks believes the Commission should not attempt to modify the voice grade access bandwidth specifications as a means of increasing data capabilities.

In addition, such a change to the definition of "voice grade access" for universal support purposes is likely to harm customers, carriers and manufacturers. For example, if embedded plant is not "grandfathered," then costly upgrades or replacement would have to be deployed. Those costs in turn would ultimately be borne by consumers, both directly for the rural customers that are the "beneficiaries" of the upgrades, and indirectly through increased universal service fund payments. At the same time, manufacturers would presumably face the costs of modifying their products to comply with the new specification, potentially necessitating the re-deployment of personnel and assets away from new technological developments that would better serve customers in sparsely populated areas.

In addition, Nortel Networks is concerned because such revised specifications would also require the industry to devote substantial resources to the development or revision of standards to reflect these changes. The change in the minimum bandwidth will affect not only loop plant (and the applicable standards for that plant), the revisions to the specifications could also affect the standards for the network equipment interconnecting that loop plant, because the network equipment has a direct impact on the performance observed by the subscriber.

Nortel Networks manufacturers a broad range of wireline and wireless network products that comply with industry standards. Unfortunately, there are a variety of industry standards in use. For example:

- TR-57, TR-303, and TA-909 specify the frequency response for digital loop carriers (DLC) as 400 to 2800 Hz. In the Nortel Networks DLC products, a slightly broader bandwidth of 300 to 3000 Hz is supported.

- ITU-T Recommendation G.712, Transmission Performance for Pulse Code Modulation Channels, defines the frequency response at 300 to 3400 Hz.

Additional standards or revisions to these standards would have to be created to reflect the amended specifications for "voice grade access" under the Commission's Rules, all of which will require time and expense.

Finally, Nortel Networks is concerned because the proposed revisions appear to be inconsistent with the precept of technical neutrality that underlies the Telecommunications Act of 1996. The proposals of the State Commissions and the RUS appear to adopt a particular network model – a combined voice and data system – as opposed to the architecture that otherwise appears to be evolving of separating voice and data (digital packet) traffic. Moreover, the revisions to the specifications of "voice grade access" for universal support funding purposes could otherwise affect choices between

wireline and wireless technology, because of the potential loss of universal service funding for wireless services that provide reliable voice services, but that may not (without adverse effects on spectrum efficiency) provide a single voice/high-speed data link. Nortel Networks believes that the Commission, under the auspices of universal service support, should not be picking technological winners and losers. Those decisions should be left to the marketplace.

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In sum, Nortel Networks supports the ultimate goal of the State Commissions and the RUS of facilitating the deployment of advanced services in rural and sparsely populated territories. Nortel Networks has long advocated a variety of means for achieving that goal, including additional spectrum allocations. The Commission should not, however, artificially expand the specification of minimum bandwidth in the definition of "voice grade access" as an indirect means of achieving that goal. As

explained above, such changes could have adverse consequences for consumers, carriers and manufacturers.

Respectfully submitted,

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